

INES 8090-S01
Advanced Sustainable Design
UNC Charlotte Civil Engineering
Spring 2009

Instructor: Helene Hilger

CARC 266

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Text: Selected readings

Scope: The course will focus on sustainable design as it applies to civil engineering, including land development choices, material selection and disposal, energy sources, and water supply and treatment. Methods of assessing sustainability and incorporating sustainable features in design will be reviewed, and students will have the opportunity to design a system or portion of a system sustainably.

Course Learning Objectives: Students will be provided with presentations, materials, and opportunities that will help them learn to do the following:

- Articulate a good definition of sustainable development
- Argue the scientific case for designing sustainably in the future
- Describe several key interdisciplinary issues related to sustainability
- Describe several discipline-specific issues related to sustainability
- Explain some of the key features that distinguish sustainable design from conventional design
- Assess the sustainability of land development designs, material selection, energy options, and water management plans
- Conduct a life cycle analysis
- Apply typical certification systems and software packages to design a sustainable structure
- Plan and prepare a preliminary design for a more sustainable facility

Course Description: The course will include lectures (including guest presentations); homework (that may take the form of calculations, short answer, essays, inquiry-based activities, presentations, and small projects) [30%]; a 6-8 page **paper** and related **project** [20%]; class participation [10%]; and a mid-term and final examination [40%]. All team submissions will include peer evaluations that will be incorporated into each individual's grade. There will also be a requirement to read one of three recommended **books*** and attend some out-of-class events or negotiate some alternative activities.

My Commitments to You. You are entitled to expect courteous and ethical behavior from me. That means adequate preparation, availability out of class, attention and responsiveness to your concerns, and my best effort to fairly assess your performance and capability (both positively *and* negatively).

Academic Integrity. You have the responsibility to know and observe the requirements of the UNCC Code of Student Academic integrity. This code forbids cheating, fabrication or falsification of information, multiple submissions of academic work, plagiarism, abuse of academic materials, and complicity in academic dishonesty. If you violate the code, you can be expelled from UNCC. If in doubt, ask before you engage in an activity you are unsure about.

The Future of Life, by E.O. Wilson
Cradle to Cradle by W. McDonough and M. Braungart
Natural Capitalism by P. Hawken, A. Lovins and L.Lovins